WHAT IS CLAIMED IS:

1. A purified and isolated recombinant nucleic acid of less than about 50 kbp comprising at least about 24 contiguous nucleotides which encode a human platelet-derived growth factor receptor (hPDGF-R) polypeptide segment.

2. A nucleic acid of Claim 1, wherein said segment is a soluble polypeptide.

3. A nucleic acid of Claim 1, wherein said segment consists essentially of a full length extracellular region of a B type or an A type hPDGF receptor, and further has a sequence of a polypeptide in Table 2 or Table 3.

4. A nucleic acid of Claim 1, wherein said segment comprises a phosphorylation site.

5. A nucleic acid of Claim 1, wherein the segment is less than about 300 amino acids.

6. A nucleic acid of Claim 1, wherein said segment is capable of binding to PDGF.

7. A nucleic acid of Claim 1, wherein said segment is a substrate for phosphorylation.

8. A nucleic acid of Claim 1, wherein said segment is capable of binding to a PI3 kinase.

9. A cell transformed with a nucleic acid of Claim X1, and wherein said cell is a mammalian cell.

10. A cell of Claim 9, further comprising a glycosylation enzyme originating from a non-fungal species.

11. A nucleic acid of Claim 1, wherein said nucleotides encoding said segment are operably linked to a promoter.

12. A nucleic acid of Claim 1, further encoding a heterologous polypeptide which is fused to said hPDGF-R segment.

13. A method for evaluating the ability of a compound to function as a hPDGF-R agonist or antagonist comprising the step of comparing the amount of a PDGF-induced response in a cell of Claim 9 with the response from a control cell, and wherein said PDGF-induced response is compared by measuring synthesis of DNA in a cell after contacting said cell with PDGF.

14. A substantially pure hPDGF-R polypeptide fragment of at least about twenty amino acids having platelet-derived growth factor (PDGF) binding activity or tyrosine kinase activity.

15. A substantially pure polypeptide fragment of Claim 14, wherein said polypeptide fragment is soluble.

16. A hPDGF-R fragment having hPDGF-R binding activity consisting essentially of amino acids beginning at about 1 and ending at about 499 of a type B hPDGF-R, and is further derived from Table 2.

17. A hPDGF-R fragment having hPDGF-R binding activity consisting essentially of amino acids beginning about 1 and ending at about 501 of a type A hPDGF-R, and is further derived from Table 3.

18. A composition comprising an unglycosylated hPDGF-R fragment.

19. A composition of Claim 18, wherein said fragment is substantially pure.

20. A composition comprising a hPDGF-R fragment, which exhibits a glycosylation pattern which is non-fungal and non-human.

21. A composition of claim 20, wherein said fragment is essentially the extracellular region of a type B or a type A hPDGF-R.

22. A composition of Claim 20 having a sequence from Table 2, or from Table 3.

23. A composition comprising a combination of:

a) a recombinant nucleic acid encoding a human platelet-derived growth factor receptor polypeptide (hPDGF-R) fragment; and

b) a non-fungal glycosylation enzyme capable of glycosylating said fragment when expressed.

24. A method for introducing a hPDGF-R activity to a cell, said method comprising the step of introducing a hPDGF-R protein fragment of at least about five hundred daltons to said cell.

25. A method for assaying the presence of a ligand for a PDGF receptor in a sample, comprising the steps of:

combining said sample with a hPDGF receptor ligand binding site; and

detecting binding between said ligand and said hPDGF receptor ligand binding site.

26. An isolated polypeptide of less than about 200 amino acids comprising a receptor kinase insert region.

27. An isolated polypeptide of claim 26, wherein said polypeptide has a phosphorylated amino acid residue.

28. An isolated polypeptide of claim 26, wherein said polypeptide comprises a sequence substantially homologous to a kinase insert segment of a PDGF receptor, and further has a sequence from Table 2 or Table 3.

29. An isolated polypeptide of Claim 26, with a pharmaceutically acceptable carrier.

30. A method for modulating the biological activity of a first protein which binds to a phosphorylated region of a second protein, said method comprising a step of:

adding to said first protein a peptide analogue of said phosphorylated region, wherein said analogue is capable of inhibiting the binding of said first protein to said second protein.

31. A method of selecting a molecule capable of inhibiting binding of a protein which binds to a target phosphorylated polypeptide, comprising the steps of:

contacting said protein with said target phosphorylated polypeptide in the presence of said molecule in a first analysis;

contacting said protein with said target phosphorylated polypeptide in the absence of said molecule in a second analysis; and

comparing said analyses to determine the effect of said molecule on said binding.

32. A method of Claim 31, wherein said contacting steps are performed in succession.

33. A method for modulating a PI3 kinase activity comprising the step of:

adding a phosphorylated PDGF receptor kinase insert region polypeptide to said PI3 kinase, thereby allowing binding between said polypeptide and said PI3 kinase.

34. A method of purifying, from a sample, a protein capable of binding to a PDGF receptor kinase insert segment, comprising the step of:

contacting said sample with an analogue of a phosphorylated polypeptide substantially homologous to a PDGF receptor kinase insert region polypeptide, thereby allowing said protein to bind specifically to said phosphorylated polypeptide.

35. A method of isolating a nucleic acid encoding a protein capable of binding to a PDGF receptor, comprising the steps of:

combining a labeled and phosphorylated PDGF receptor kinase insert region polypeptide with cells expressing various proteins, thereby labeling those cells which express said nucleic acid to produce a protein which binds said phosphorylated polypeptide, and

isolating those cells which have been labeled.

36. A method of Claim 35, wherein said protein capable of binding a PDGF receptor is PI3 kinase or c-fms.